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**IS INVESTING IN COMMUNICATION WORTH IT?
AN EXPERIMENTAL STUDY OF COMMUNICATION IN A RELATIONAL CONTRACT SETTING**

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IS INVESTING IN COMMUNICATION WORTH IT? AN EXPERIMENTAL STUDY OF COMMUNICATION IN A RELATIONAL CONTRACT SETTING¹

Sharon Raszap Skorbiansky², Steve Wu²

OBJECTIVE AND BACKGROUND

Analyze who benefits from the addition of communication in a market

- Many markets include communication forums (e.g. Angie's List for services, Yelp for restaurants). The forums facilitate trading between buyers and sellers of services or products.
- Communication and information are especially important for markets that do not have a third-party quality enforcer, either because such an institution is not available (e.g. broiler industry) or because quality is not readily observable (e.g. fresh-market tomatoes).
- How does this unverified communication (UV), communication that is not third-party verified, affect the market?
- What do markets have to gain from investing to improve the quality of communication (e.g. Yelp "elites" who are given incentives to be honest), such as setting up a mechanism to provide verified (truthful) communication (VC)?

EXPERIMENTAL PROCEDURES

Experiments were conducted in the Vernon Smith Experimental Laboratory (VSEEL) at Purdue University between November of 2013 and February of 2014. Purdue students signed up through ORSEE (<http://orsee.krannert.purdue.edu/orsee/public>) and registered to be invited to experiments. A total of 102 students participated. The experiments were coded and run using z-tree.



VSEEL at Purdue University

EXPERIMENTAL DESIGN

We conducted three different treatments:

1. No communication available (treatment 1)
2. Unverified communication (treatment 4)
3. Verified communication (treatment 4.t)

In all treatments, subjects were assigned to be either a buyer or a seller and then endogenously matched themselves to trade an abstract good.

The experiment was parameterized such that it was socially optimal to trade.

Buyers proposed contracts to sellers that included the following terms:

1. A binding (fixed) price, ranging from 1-200
2. A non-binding (discretionary) quality, ranging from 1-15
3. A non-binding bonus payment, ranging from 1-200

If trade occurred the buyer's and seller's profits were calculated as follows:

Buyer profit: $\pi = 11 * quality - price - actual\ bonus$

Seller profit: $u = price + actual\ bonus - cost(quality)$

Seller cost: $c(quality) = \frac{quality^2}{2}$

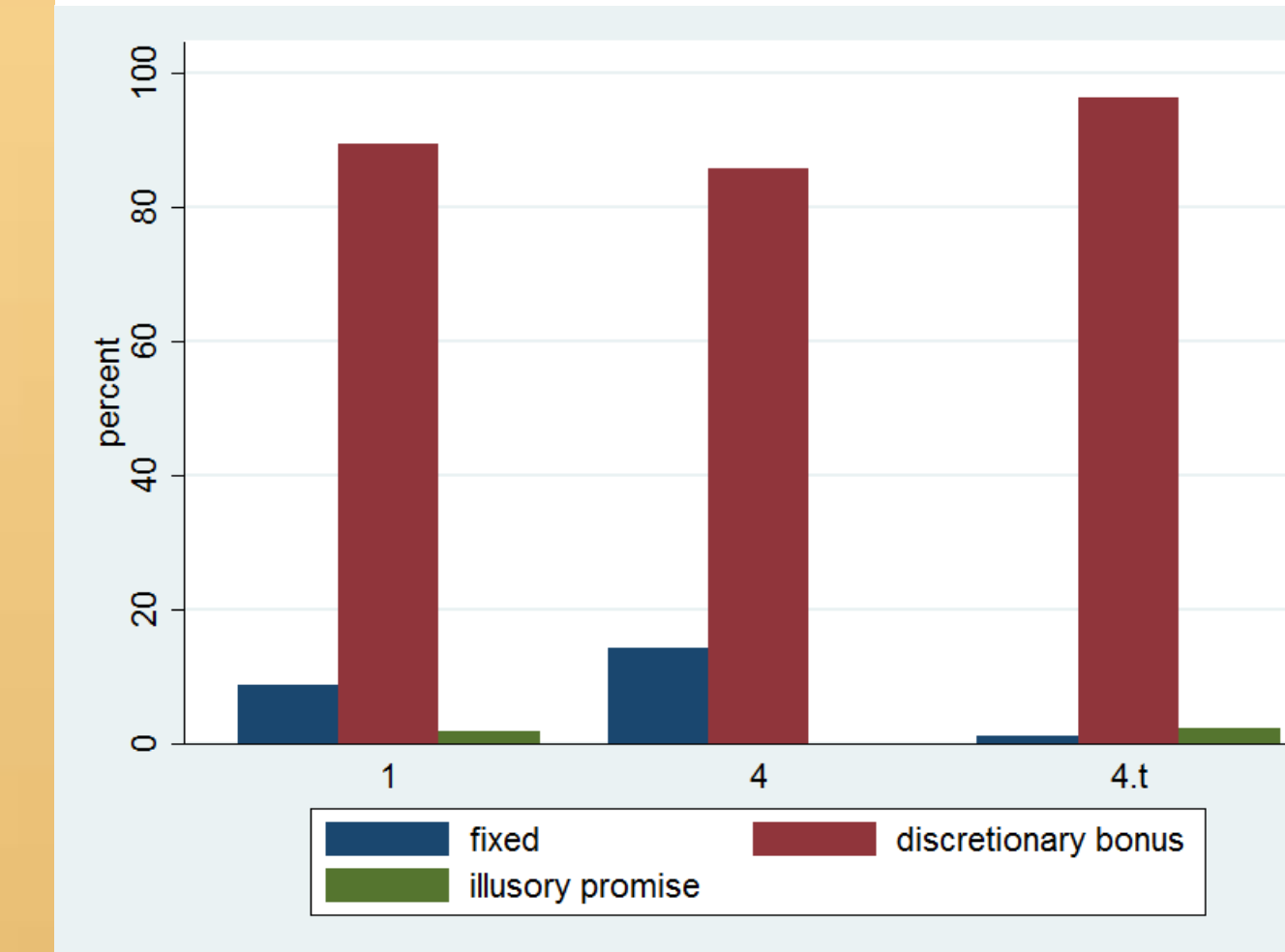
If no trade occurred, both the buyer and seller received a reservation payoff of 10.

HOW DOES THE GAME PLAY OUT?

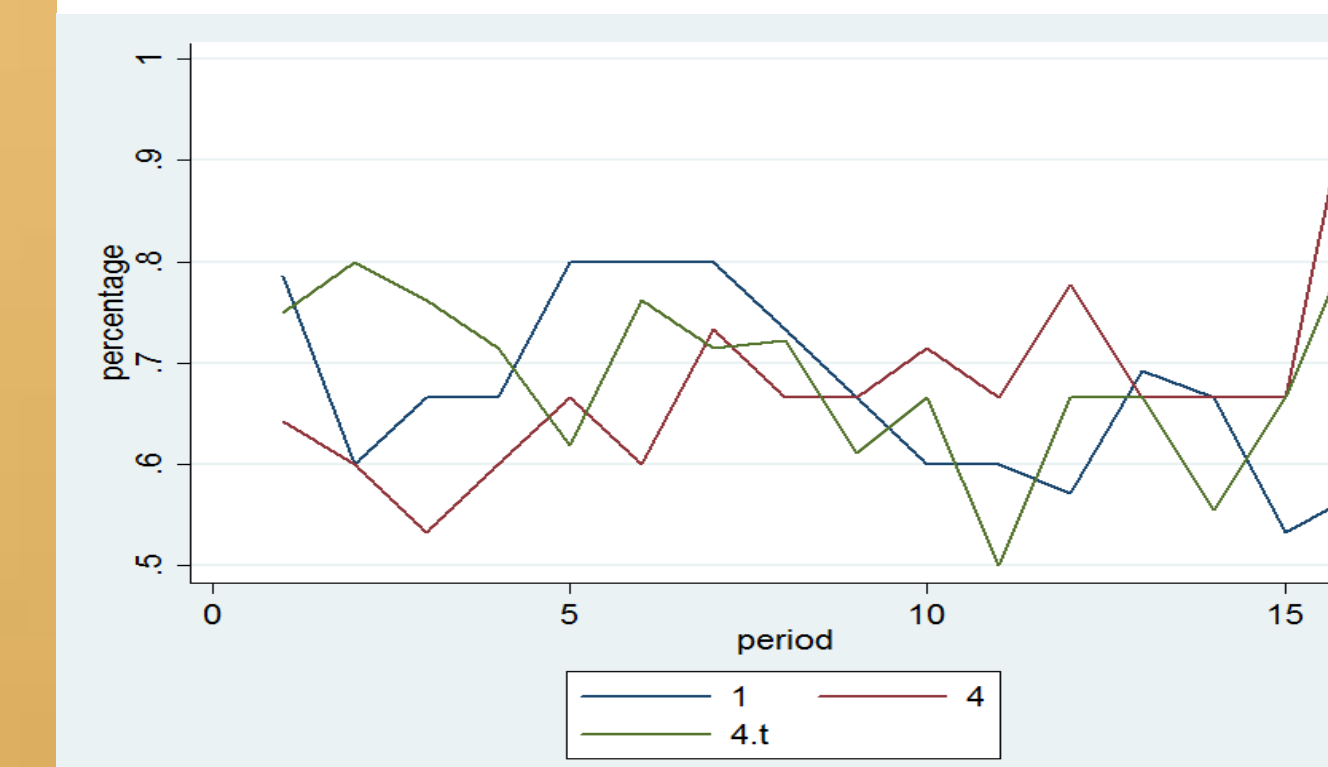
1. **Proposal Phase:** Buyers make proposals on the terms of trade to a seller. Once all proposals are submitted, sellers can choose to accept one offer.
2. **Quality Determination Phase:** If a seller accepted a proposal, then she must now choose the actual quality to provide to the buyer.
3. **Payment Determination Phase:** Buyers observe quality and choose actual bonus to pay.
4. **Income Screen:** All traders observe outcomes from this period.
5. **Message Phase:** Each trader can send messages through 4 different channels: Public, only to buyers, only to sellers, or private. Messages were preselected and pertained to information regarding the contract (price, quality, bonus), rewards ("The buyer paid the promised bonus"), punishment ("The buyer did not pay the promised bonus", "Do not trade with seller 3"), and coordination ("I did not receive an offer in this period", "I would like to trade with buyer 2 again").
6. **Roulette:** At the end of each period there was an 80% chance of the current "stage" ending. A maximum of 3 stages were played in each experiment. If 10 periods had been played, then the current stage was the last stage.

KEY FINDINGS AND IMPLICATIONS

Types of contract accepted by treatment



Acceptance rates by treatment



	(1)	(2)	(3)	(4)
treatment 4	-0.368 (0.815)	0.309 (0.744)	-0.384 (0.599)	-0.562 (0.655)
treatment 4.t	1.254* (0.741)	1.088* (0.605)	0.702* (0.378)	0.693** (0.348)
price		0.0380** (0.0182)	0.0217** (0.00864)	0.0194** (0.00877)
desired effort		0.520** (0.236)	0.656*** (0.128)	0.669*** (0.125)
relationship			0.496*** (0.0673)	0.467*** (0.0708)
other offers			0.553** (0.256)	0.540** (0.230)
seller's total profit			-0.0101*** (0.000936)	-0.00975*** (0.00130)
bonus included		0.153 (1.028)		
desired bonus		0.0216 (0.0201)		
period	0.0131 (0.147)			
periodsq	-0.000468 (0.00855)			
Constant	7.793*** (0.637)	-0.0555 (1.388)	1.163 (1.289)	1.359 (1.525)
Observations	455	455	455	455

Wald Test for joint significance of period and period squared for regression (1): 0.9909
Wald Test for joint significance of bonus inclusion and bonus amount for regression (2): 0.5233
Wald tests for equality of treatments 4 and 4.t: 0.0783, 0.2961, 0.0433, 0.0188

Tobit with robust standard errors adjusted for clustering on sessions.
*, **, *** signifies that coefficients are significantly different from zero at 10%, 5% and 1%

Statistics on social surplus and income inequality

	1	4	4.t
social surplus	35.735	34.696	38.727
income inequality	9.05	4.363	6.125

Results were supported by our theoretical predictions which employed a principal-agent contracting model.

- Buyers preferred to offer discretionary bonus contracts (price and bonus included) over illusory promise (only bonus) or fixed price contracts (only a fixed price). In the presence of VC, almost no fixed price contracts were created implying that the trust of not being cheated allowed buyers to include a larger amount of discretion in their offers.
- UC and VC were revealed to be good tools for development of markets, with very different effects on outcomes.
- VC achieved the highest levels of average efficiency (quality) in the market and had significant improvements over both "no communication" and UC (whose efficiency were not significantly different from each other), even after controlling for all exogenous variables.
- Social surplus increased significantly with VC, but not when UC was introduced. However, UC was a better tool for reducing disparity in incomes between buyers and sellers.
- Overall acceptance in the market does not significantly change between treatments. However, sellers are more likely to accept offers early on in the game in treatments 1 and 4.t, and less so later on, and the opposite is seen in treatment 4.

Footnotes:

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